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ABSTRACT

Modification of teacher behavior using videotapes and the Withall Social Emotional Climate and Golloway instruments to classify teacher behaviors resulted in maintaining positive pupil attitudes toward school and teachers and self-esteem over one academic year. Previous studies had shown a decline in these types of pupil attitudes during an academic year. Control classrooms in the study exhibited this decline. Six classrooms in grades 3, 6, and 8 were experimental sites. The six control classrooms of the same grades were selected in a poor, white Appalachian school district. Results indicated that socioeconomic level did not relate to student attitudes and that the verbal behavior of the teacher is one factor that affects student attitudes. The conclusion of the study is that achieving a positive attitude toward school on the part of students is a complex problem calling for more careful study of teacher behaviors and attitudes. (JD)

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AN INTERVENTION TO ASSIST TEACHERS IN CREATING SUPPORTIVE CLASSROOM CLIMATES

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Presentation for

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AN INTERVENTION TO ASSIST TEACHERS IN CREATING SUPPORTIVE CLASSROOM CLIMATES

Affective climates in classrooms have been described by critics of the school as repressive, destructive of self-esteem, anxiety producing, and repressive of creativity. Data from the Pennsylvania Quality Assessment program reported in 1973 showed that there had been a decline in the attitudes toward school of secondary school students over a six year period.[1] Elementary student attitudes toward school had deteriorated in the same period.

Of concern in this paper is the change in student attitudes toward school, the perception of teacher control behaviors, and student self esteem over a period of one year's intervention to create a supportive climate for pupil attitudes.

A project was designed to test the effectiveness of an intervention in an elementary school designed to assist teachers to improve classroom affective climate. It was expected that the three student attitudes measured would be assisted by the intervention methods. The entire project lasted two years (1974-76), the first year of which was to develop test concepts and methods, and the second of which was to apply the methods developed during the first year. A school district in northern Appalachia volunteered to be the test district. It was a small, poor district with an entirely white, rural and small town population. This program is referred to as an intervention program rather than an experiment. A comparison group is referred to because the strict rules for control groups were not exercised. Hence, this is not referred to as an experiment.

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[1] Educational Quality Assessment in Pennsylvania: The First Six Years, (Harrisburg, Pennsylvania: Pennsylvania Department of Education, 1973).

The first year, two fifth grade and two sixth grade rooms in a fourteen room elementary school (grade K-6) was selected for the development work. Four classrooms in another elementary school of identical size were selected as comparison classrooms. Both schools were attended by pupils of mainly blue collar working families.

During the first year methods were tested for assisting teachers in developing classroom climates which were supportive of pupils attitudes. The methods developed included video taping of classroom behavior of teacher and pupils every two weeks, review of the video tapes by the teacher and an observer, use of the Withall Social Emotional Climate and Golloway instruments to classify teacher behaviors, which had been taped, discussion of each teacher's protocols with the teacher, training sessions with teachers in practicing comments which were pupil supportive, discussion sessions concerning teaching strategies for creating classroom climates supportive of students, and planning activities which changed classroom routines to become more interesting to students. The teachers made a videotape which described the key steps which they had developed during their first year's work.

The data from the first year of the project included pre and post achievement and attitude data for students of both schools. The attitude data for students of the comparison school became more negative between pre and post test application. The intervention classrooms were more stable in attitude measures, becoming slightly more negative, but much less so than the control classrooms.[2] Based on the first year data as prevention in the decline in

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[2]Patrick D. Lynch, Reynolds Ferrante, Janet Bacon, Training Manual, Teacher Role Development, 1974-75. Report submitted to the Pennsylvania Department of Education, Harrisburg, Pennsylvania, June 1975.

student attitude would be viewed as an advantageous outcome, since it appeared that typically, student attitudes toward school become more negative through the school year.

The second year of the intervention program was conducted using a design developed on the basis of the first year's work.

Two different schools were selected in the same district for the intervention. Two third, two fifth, and two sixth grades were selected from a school serving a white, blue collar and unskilled labor clientele. The teachers in the intervention school all volunteered for the project. All were paid for any overtime required in connection with the project.

The intervention consisted of the following steps:

1. Consultation with the teachers the spring before the program began concerning their roles if they volunteered for the intervention.
2. A two day orientation for the teachers of the intervention classes.
3. The two teachers in each of the three grades consulted in coordinating their learning activities with the objective of establishing two-person teams by the end of the school year.
4. A schedule of videotaping each teacher every two weeks for a one hour period. Each subject matter was eventually to be videotaped at least twice during the year. A project coordinator trained the teachers and students in the fifth and sixth grades to do this videotaping. The project coordinator did all the third grade videotaping. The videotaping sequences included teacher and pupil behavior during the one hour. The machines were arranged so that the teacher and pupils were observed at the same time. The idea was to videotape pupil reactions to teacher verbal and non-verbal behavior.

5. The videotapes were than reviewed by each teacher with the coordinator. The effect of teacher behaviors on pupil behavior was discussed, as well as future teacher strategies for involving students more directly in the learning process, bringing students who had been consistently silent into the activities, and establishing new classroom routines. Introducing new classroom activities and movement patterns so as to provide a larger repertoire of student activities was expected to result in better student attitudes toward school.

7. Two-hour non credit seminars with outside experts in classroom observation, the ecology of the classroom, and elementary teaching methods were held five times during half day released sessions for the participating teachers.

8. One day visits to two teamed "open" elementary schools outside the district were made in the winter and early spring.

9. Arrangements to visit each others classrooms for observation were made for the teachers on request, providing substitutes were available.

10. Teacher behavior as captured on the videotape was rated according to the Withall Social Emotional Climate Index. The protocol was then shown to the teacher and discussed along with the videotape. The tapes were scored for the Withall index by the project coordinator. If a teacher so requested, another teacher would view the videotape and both would comment on the tape and protocol.

11. Teachers attempted to vary their verbal behavior, in accord with what they saw of their own classroom behavior on videotape, and inaccord with what they desired from students. The teachers attempted to use more learner supportive and acceptant or problem structuring statements, and to lessen the number of reproving statements.

12. Teachers attempted to use classroom activities which:

    a. required students to move from a fixed seating position for more than 45 minutes.

    b. required the student to do individual work in the room each day with resources which had to be obtained from the library.

    c. required the student to work with a group in the preparation of a product each week.

    d. required students to use materials other than the textbooks.

    e. required students to report to the teacher on their own estimated progress.

The instruments used to measure the attitude change over the period of a academic year were the:

1. Tennenbaum student attitude scale which is to be found in the March, 1940, number of Educational Administration and Supervision (pp. 176-188), and the results of which are described in Philip W. Jackson's, Life In Classrooms.[3] This instrument measures student attitude toward school and teacher.

2. The "Pupil Control Behavior Scale" designed by Willower and Helsel.[4] This instrument is a measure of the pupil's perception of how controlling the teacher is. The scale is from controlling to humanistic.

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[3]Philip W. Jackson, Life In Classrooms, New York, Holt-Rinehart-Winston, 1968.

[4]A. Ray Helsel and Donald J. Willower, "Toward Definition of Pupil Control," The Journal of Educational Administration, Vol. XII, No. 1, May 1974, pp. 114-123.

3. The third instrument was one designed by the first year staff of the project and is called the "University Scale." It consists of items which measure pupil's self esteem or the estimation of a student to be able to do well those things which are required in school.

The intervention group tested on each of these as a pretest in October, a midtest in February, and a posttest in May. The comparison group was tested on the three measures in September and May.

There was no attempt to raise achievement by means of the intervention but measuring the change in achievement was necessary as a condition of access to the system. Quite simply and rightly, the school board had to be shown whether pupil achievement was affected, and in which direction, by the intervention.

The classrooms in the third grade of the intervention and comparison schools took the California Test of Basic Skills in September and May. At the same times the fifth and sixth grade intervention and comparison classrooms were administered Metropolitan Achievement Test.

Gains in attitude and achievement tests were compared between intervention and comparison groups to determine whether the intervention was affective in maintaining a more favorable pupil attitudes toward school and self, and whether, as a by-product there was some effect on achievement.

ANALYSIS OF PRE-MID-POSTTEST ATTITUDINAL DATA

The intercorrelations of the three variables for each of the three grade levels within groups are presented in Table 1. All intercorrelations are significantly higher than zero at the $p < 0.01$ level. The intercorrelation of the University Scale and the Tennenbaum Scale is very high, above

+0.7 in every situation. This is to be expected since the scales are designed to measure general attitudes toward school. The intercorrelations of the PCB with the University Scale and the Tennenbaum Scale tend to be somewhat lower in most situations. This is consistent with the fact that the PCB is designed to measure student perception of classroom control rather than general attitude toward school.

The organization of this section of the report presents the data summary between group comparisons for pretests and posttests and within group comparisons for differences in pre-, mid-, and posttests. Each guide is considered separately. Results are presented numerically and graphically.

The between groups comparisons are constructed using the Behrens-Fisher t-test which is appropriate when sample or group sizes are different and group variances may be different.

Within each group, comparisons are conducted using a correlated t-test which accounts for group pre-posttests correlations.

Grade 3

University Scale

Table 2 presents the summary and comparisons between and within the intervention and comparison groups on the University Scale. The University Scale is comprised of thirty-five items relating to Se/F concept of a student in school. Scores can range from 35 (most positive attitude) to 175 (most negative attitude). A score of 105 is a neutral attitude. Both the intervention and experimental groups demonstrated a slightly positive attitude toward school on all testings.

On the between groups comparisons, there was no significant difference between group pretests. However, there was a significant difference between

posttests with the intervention group having a significantly more positive attitude toward school.

There was a substantial change between the pre- and posttests for the intervention group although it was not statistically significant. The comparison group demonstrated a substantial change in a less positive attitude direction.

Figure 1 presents the graphical description of the mean scores for the third grade on the University Scale.

PCB Scale

The PCB Scale instrument is comprised of twenty items relating to student perception of pupil control in the classroom exercised by the teacher. Scores can range from 20 (humanistic teacher behavior) to 100 (custodial teacher behavior). The middle score is 60.

Table 3 presents the results. Both groups were in the humanistic range on all of the testings. The intervention group perception was significantly more humanistic on the pretest than the control group. This difference was not found on the posttest. On the posttest both groups were similar.

There was a significant change toward a less humanistic perception between the pre- and posttests for the intervention group. It is possible that since the intervention group perception was highly humanistic on the pretest (43.0), much of the change in a less humanistic direction could be a function of statistical regression. Figure 2 presents these results graphically.

Tennenbaum Scale

Table 4 presents the results of the Tennenbaum Scale which is a twenty-six item scale relating to attitude toward school. The possible range, using our scoring approach, is 26-130 with a middle score value of 78. Both groups were in the positive side of the range on all tests.

The intervention group was significantly more positive than the comparison group on both the pre- and posttests.

In the within group comparisons, the intervention group remained at the same level between pre and posttesting while the comparison group became less positive, almost reaching the neutral point on the continuum.

Figure 3 presents the results graphically.

Summary

In general, the intervention group compared with the comparison group tended to have a more positive attitude as measured by the University Scale, tended to regress toward a less extreme positive scope on the PCB, and maintained a positive attitude as measured by the Tennenbaum Scale while the comparison group demonstrated a more neutral one.

Thus, there did seem to be a positive effect on student attitudes as a result of the teacher role developed project.

Grade 5

University Scale

Table 5 presents the results of the University Scale testing. All testings were in the positive range. The comparison group demonstrated a significantly more positive attitude on the pretest. It remained slightly more positive on the posttest, but there was no significant difference. There was a significant decrease in positive attitude from pre- to posttesting for the comparison group.

Figure 3 presents the results graphically.

PCB Scale

Table 6 presents the results of the PCB scale for the fifth grade groups. All testings were on the humanistic range at the continuum. The comparison

group was significantly more positive on the pretest than the intervention group. This was not the case on the posttest. The comparison group demonstrated a significant change in the less humanistic area between the pre- and posttesting.

Figure 5 presents the results graphically.

Tennenbaum Scale

Table 7 presents the results of the Tennenbaum Scale testings, all of which were in the positive range. The comparison group was significantly more positive on the pretest than the intervention group. There was not a significant difference between the posttests. Both the intervention and comparison groups demonstrated a significantly less positive attitude on the posttests than pretests.

Summary

On all three of the scales, the comparison group pretests were significantly more positive than the intervention group pretests. However, after the program, there were no significant posttest differences. Thus, the program may have had some effect in tempering an inclination of change in a less positive direction for the comparison group.

Grade 6

University Scale

Table 8 presents the results of the University Scale for the sixth grade. All testings were in the positive range on the scale. The posttest for the comparison group was close to the neutral position on the scale. There was no significant difference between the group pretests. However, the intervention group posttest was significantly more positive than the comparison group posttest. The comparison group demonstrated a significant change in

the less positive direction between the pre- and posttests.

Figure 7 presents the results graphically.

PCB Scale

The results of the PCB testing for the sixth grade are presented in Table 9. The intervention group scores were very positive on all testings while the comparison group was very close to the neutral point on the continuum. The intervention group perception was significantly more humanistic on both the pretest and the posttest, even though it showed a significant change in a less positive direction between the pre- and mid-posttestings.

The graphical results are presented in Figure 8.

Tennenbaum Scale

The results of the grade 6 Tennenbaum Scale are presented in Table 10. All of the testings were in the positive range with the posttest of the comparison group about neutral. There were no significant differences between the intervention and comparison groups on pre- or posttests. There were no pretest-posttest differences within the groups although there was a significant change in a less positive attitude direction between the mid- and posttest for the intervention group.

Figure 9 presents the results graphically.

RELATION OF TEACHER VERBAL BEHAVIOR TO STUDENT ATTITUDE TRENDS

Each teacher was observed by video tape every two weeks during a six month period. The teacher's verbal behavior during the one hour video tape sequence was then scored using the Withall Social Emotional Climate Index. The following classification scheme is employed in the Withall Social Emotional Climate Index:

1. Learner supportive statements.
2. Accepting or clarifying statements or questions.
3. Problem-structuring statements or questions.
4. Neutral statements evidencing no supportive intent.
5. Directive statements or questions.
6. Reproving, disapproving, or disparaging statements or questions.
7. Teacher-supportive, defensive, or justifying statements or questions.

A sample of four protocols of the Withall Social Emotional Climate Index were taken for each teacher, all from December and January, for reading and mathematics to get a mean number of behaviors for the teacher.

The data for each teacher can be found in Table 11. Teachers A and B were first grade teachers, C and D were fifth grade teachers, and E and F were sixth grade teachers. Teachers A, C and E used a higher mean proportion of both neutral (4) and directive (5) statements than teachers B, D and F. Teacher C was the only one having a proportion of reproving (6) statements. Teacher E was the only one to use clarifying (2) statements. Teachers B, D and F contrasted within their own grades with teachers A, C and E in using a higher proportion of problem-structuring (3) statements. Teacher F was somewhat more heavily-supportive (1) and problem-structuring than teacher E.

The higher an attitude score the more pessimistic or unfavorable the attitude. In analyzing the attitudes toward school of the students of each teacher, it can be seen from Figures 10 through 16 that teachers A and E had students whose attitudes toward school (Tennenbaum) were less favorable than teachers B and F in the same grades. Teachers C and D who contrasted most strongly on the Withall Scale (within the fifth grade) did not have students whose attitudes were markedly different.

Statistical contrasts were not established for the teacher by teacher data so these analyses are impressionistic rather than statistically significant. But a trend is noticeable in the profile interests within first and sixth grades. In the fifth grade, teacher C's pupils made the most improvement in attitude, despite his verbal protocols.

Instead of a clearcut difference between teachers A and B, C and D, and E and F, there are some indications that perhaps teachers who used a higher proportion of problem structuring statements and a smaller proportion of neutral and directive statements also had students with poorer attitudes. The relationship is not strong enough to claim a cause and effect relationship. Types of verbal statements and pupil attitudes need some closer examination.

ACHIEVEMENT TRENDS

The achievement tests used were the Metropolitan in Grades 5 and 6 and the California Test of Basic Skills were used in Grade 3. The achievement tests were administered in September 1975, and May 1976.

The grade three intervention classrooms gained significantly more in total Math than the control classrooms. There were no significant differences in gain in total Reading between comparison and intervention classrooms, but the comparison group gained more in total language achievement during the year than the intervention group.

The grade five intervention classrooms had significantly higher mean gains in language and mathematics achievement than the comparison classrooms. Pre- and posttest means were higher in intervention classrooms in all those subjects.

The grade six intervention classrooms had greater mean gains than comparison classrooms in all subjects. The intervention classrooms had higher pretest means and widened their lead in all three subjects before posttesting.

Intervention classrooms consistently gained more than comparison classrooms in mathematics skills. Fifth and sixth grade intervention classrooms tended to gain more in achievement over the year than comparison classrocms.

CORRELATIONS OF ATTITUDE AND ACHIEVEMENT

In the third grade intervention classrooms, attitude and achievement measures were uncorrelated. In the comparison classrooms there were significant negative correlations between the University Scale, which was a self-esteem scale and each of the three achievement measures in pre and post applications. The PCB measure did not correlate with achievement measures.

In the fifth grade intervention classrooms, the attitude and achievement measures were not correlated, with one exception. The attitude pretest applications were significantly correlated, negatively, with the pre and post achievement measures, with one exception (pre total math score).

In Grade 6, attitude and achievement measures were correlated in experimental and control classrooms.

In the comparison third and fifth grades there was a tendency for high achieving students to have positive attitudes toward self and school. In the experimental schools achievement and attitude were uncorrelated.

CONCLUSIONS

The following conclusions can be offered on the basis of the data presented:

1. The project was an attempt to improve affective climates in classrooms and to identify a dependable means for doing this. The results of the first year's (1974-75) project revealed that pupil attitudes of intervention classrooms toward school remained more stable over a period of nine months and contrasted with the comparison classroom's decline in attitudes over the same periods of time. If these findings could be used as expectations for the second year of the project (1975-76) and the one here reported, the comparison groups would be expected to exhibit less positive attitude at the close of the year than at the beginning of the year.

The University scale, a scale measuring self esteem, elicited data showing the expected effect in all three grades. In grade three the intervention group and comparison group began with the same mean, but the intervention group was significantly better in the self-esteem measure at the end of the year than the comparison group. In grades 5 and 6, the intervention groups remained stable on the measure while the mean of the comparison groups were significantly more pessimistic at the end of the year than the intervention groups.

In students' attitude toward school measured by the Tennenbaum Scale, the third grade groups did not differ from one another at the beginning or end of the school year. In the fifth grade the comparison and intervention classrooms were significantly different at the beginning of the school year, but at the end did not have significantly different means. The comparison group's mean score rose somewhat more (reflecting more

dislike of school) than the intervention group. The sixth grade intervention and comparison group's means did not change significantly, nor did they change their position comparatively.

The PCB is a measure of pupil's perception of teacher control behavior. In third and sixth grades the pupils in the intervention groups perceived their teachers exhibiting significantly more control at the end of the year than at the beginning while the comparison groups' mean perceptions did not change during the year. In the fifth grade, the opposite trend is evident; the intervention group perceived no change from pre to post application, but the comparison group perceived their teachers as exhibiting more control at the end than at the beginning of the school year.

In summing up the above results, nine possible comparisons could be identified, one for each instrument used in each grade; a plus indicates a result in accord with expectation favoring the intervention group, a minus is a finding in the opposite direction favoring the comparison group, and an equal sign (=) signifies a "no difference" in the trends between intervention and comparison groups. Each comparison includes pre and posttest applications.

Grade	U. Scale	PCB	Tennenbaum
3	+	-	=
5	+	+	+
6	+	-	=

The project worked best in the fifth grade, and had less favorable effects in the third and sixth grades.

In five applications out of nine the results were as expected, and in two of the applications there was no difference between intervention and comparison groups.

In the two comparisons for the PCB, the results appeared to favor the comparison group, which remained stable. However, in both cases the means for the pre tests for the intervention groups were well below the comparison group means. Hence, the intervention groups may have been showing evidence of regressing toward the means.

While the data are not from randomly sample classrooms, it might be concluded that the project had moderately successful results. The results were not those expected by chance.

2. The correlations between achievement and attitude measures were not significant for the intervention classrooms, but were significant in the third and fifth grade comparison classrooms. These data suggest that there were tendencies for higher achieving students in the third and fifth grade comparison classrooms to have better attitudes toward school and higher self esteem.
3. This project did not set out to elicit greater gains in achievement in the intervention classrooms than in the comparison classrooms. However, there was a tendency in that direction, especially in grades five and six, and in all grades in mathematics. This tendency may be related to the fact that the project tended best to help students' self esteem, as measured by the University Scale.
4. Improving pupil attitudes toward school appears to be more difficult than improving pupil self esteem. If it can be demonstrated that if there is a payoff from increased self esteem in higher achievement, self esteem is not a poor second to better attitude toward school.
5. Establishing a humane climate in schools is well worth the effort, whether or not achievement is raised as a consequence. Institutions need not be

prisons in order to secure high output. Even if schools were securing high achievement and did so in an inhumane setting, the cost would be too high for those especially who don't achieve well, and the sacrifice of human values for all children in itself is a loss difficult to justify. Schools produce two kinds of results; achievement and attitudes. If the latter are neglected or are depressed the consequences are as serious for society as the penalty imposed on children of not learning skills. Learning of attitudes toward school and self are as long lasting as learning subjects and skills, and the consquences should not be minimized for society of children who grow up with disdain for the schooling process and low feelings of self worth in learning situations.

COMMENTS

It appears on the basis of these data that it is difficult to make student attitudes toward school and teacher more positive over a year's time. Students become satiated with the expectations of the school over the academic year and get the blahs. A real battle is necessary to keep the students from getting turned totally off during the year. The most that can be hoped for with teachers pulling out all the stops to keep kids turned on is that the students' attitudes will not get significantly worse during the school year.

Self-esteem appeared to be the measure which responded best to this intervention. And it related to achievement gain. However, a replication is in order before great claims can be made about keeping up the level of pupil self-esteem over a year's time.

Pupil control behavior of the teacher as perceived by the pupils appeared not to be a variable which was affected by the intervention. This may attest to the robustness of the PCB measure, because students may perceive teacher behavior as necessarily controlling or humane along with any intervention.

Contrary to Hosford (1973)[5] it is possible that it is more difficult to show change in student attitudes toward school than it is to change students' skills. The measures of student attitude may have to be other than paper and pencil, or interview, however, as I suspect that in measuring student attitude, over encounters mainly expressed negative attitudes of the young toward any involuntary institution. An analogy is the attitude of inducted youth in the army. Would you expect to see their attitudes improve or decline over time, in spite of the appearances of fun and frolic at times? Attitudes toward organization, tolerance of that organization, and production in it, all appear to be uncorrelated.

Attitudes toward institutions and their controlling adults are unsurprisingly unfavorable, but every institution, including the family, exacts its toll in boredom, unpleasantness, and psychological withdrawal.

Some indications were present to the effect that the greater the proposition of neutral, directive and reproving statements, the more negative student attitude was observed.

The foregoing is not a prelude to throwing in the towel on trying to build humane schools. The challenge of changing unresponsive institutions to become responsive is perhaps the taught task of our times. To recognize

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[5] P. L. Hosford, On Instructional Theory, A Beginning, Englewood Cliffs, New Jersey: Prentice Hall, 1973.

it as tough is not the counsel of despair, nor is it of a piece with the comment that "Someone ought to do something about prisons." It is rather the acceptance of the dimensions of a great and necessary challenge. The big problem is that we seem to know more about and have more concern about changing cognitive skills than attitudes, even though attitudes are in the long run just as important. The verbal behavior of the teacher appears to be one factor which may be one which affects student attitudes. Certainly the linkage between this easily observed variable and student attitude deserves more attention.

TABLE 1

ATTITUDE VARIABLE INTERCORRELATIONS

By Grade within Group, Pre- and Post-

			UNIVERSITY SCALE		PCB SCALE	
SCALE	GROUP	GRADE	PRE	POST	PRE	POST
PCB	INTERVENTION	3	.744	.767	----	----
		5	.724	.732	----	----
		6	.699	.667	----	----
PCB	COMPARISON	3	.555	.644	----	----
		5	.465	.734	----	----
		6	.637	.582	----	----
TENNENBAUM	INTERVENTION	3	.735	.863	.583	.620
		5	.730	.778	.509	.707
		6	.811	.766	.683	.633
TENNENBAUM	COMPARISON	3	.800	.809	.543	.577
		5	.742	.781	.461	.605
		6	.707	.754	.637	.661

TABLE 2

COMPARISON OF MEAN DIFFERENCES

UNIVERSITY SCALE - GRADE 3

SUMMARY

GROUP	PRETESTING n	$\bar{X}$	S	MID-TESTING n	$\bar{X}$	S	POSTTESTING n	$\bar{X}$	S
INTERVENTION	41	87.93	20.25	41	86.41	20.40	41	81.49	21.23
COMPARISON	47	88.19	24.37	--	-----	-----	47	92.62	22.37

BETWEEN GROUPS COMPARISONS

TESTING	$\bar{X}_{Int.}$	$\bar{X}_{Comp.}$	DIFF.	t'	df'	p
PRE	87.93	88.19	+ 0.26	0.05	86	NS
POST	81.49	92.62	+11.13	2.39	85	<0.05

WITHIN GROUP COMPARISONS

GROUP	COMPARISON	DIFF.'	r	t	df	p
	$\bar{X}_{Pre} - \bar{X}_{Mid}$	1.52	.598	0.53	40	NS
INTERVENTION	$\bar{X}_{Mid} - \bar{X}_{Post}$	4.92	.603	1.70	40	NS
	$\bar{X}_{Pre} - \bar{X}_{Post}$	6.44	.502	1.99	40	NS
COMPARISON	$\bar{X}_{Pre} - \bar{X}_{Post}$	-4.43	.602	-1.45	46	NS

NOTE: A positive value indicates a change of attitude in the positive direction.

TABLE 3

COMPARISON OF MEAN DIFFERENCES

PCB - GRADE 3

SUMMARY

GROUP	PRETESTING n	$\bar{X}$	S	MID-TESTING n	$\bar{X}$	S	POSTTESTING n	$\bar{X}$	S
INTERVENTION	41	43.02	8.97	41	44.93	11.40	41	47.76	13.39
COMPARISON	47	49.21	11.24	--	-----	-----	47	48.02	10.28

BETWEEN GROUPS COMPARISONS

TESTING	$\bar{X}_{Int.}$	$\bar{X}_{Comp.}$	DIFF.	t'	df'	p
PRE	43.02	49.21	+6.19	2.87	85	< 0.01
POST	47.76	48.02	+0.26	0.10	75	NS

WITHIN GROUP COMPARISONS

GROUP	COMPARISON	DIFF.'	r	t	df	p
INTERVENTION	$\bar{X}_{Pre} - \bar{X}_{Mid}$	-1.91	.525	-1.20	40	NS
	$\bar{X}_{Mid} - \bar{X}_{Post}$	-2.83	.398	-1.32	40	NS
	$\bar{X}_{Pre} - \bar{X}_{Post}$	-4.74	.185	-2.07	40	< 0.05
COMPARISON	$\bar{X}_{Pre} - \bar{X}_{Post}$	1.19	.579	0.82	46	NS

TABLE 4

COMPARISON OF MEAN DIFFERENCES

TENNENBAUM - GRADE 3

SUMMARY

	PRETESTING			MID-TESTING			POSTTESTING		
GROUP	n	$\bar{X}$	S	n	$\bar{X}$	S	n	$\bar{X}$	S
INTERVENTION	41	63.98	10.72	41	67.29	13.21	41	64.02	11.72
COMPARISON	41	71.17	14.48	--	-----	-----	47	74.28	12.68

BETWEEN GROUPS COMPARISONS

TESTING	$\bar{X}_{Int.}$	$\bar{X}_{Comp.}$	DIFF.	t'	df'	p
PRE	63.98	71.17	+ 7.19	2.67	84	<0.01
POST	64.02	74.28	+10.26	3.94	86	<0.01

WITHIN GROUP COMPARISONS

GROUP	COMPARISON	DIFF.'	r	t	df	P
INTERVENTION	$\bar{X}_{Pre} - \bar{X}_{Mid}$	-3.31	.627	-2.00	40	NS
	$\bar{X}_{Mid} - \bar{X}_{Post}$	3.27	.538	1.74	40	NS
	$\bar{X}_{Pre} - \bar{X}_{Post}$	-0.04	.534	-0.02	40	NS
COMPARISON	$\bar{X}_{Pre} - \bar{X}_{Post}$	-3.11	.591	-1.72	46	NS

TABLE 5

COMPARISON OF MEAN DIFFERENCES

UNIVERSITY SCALE - GRADE 5

SUMMARY

	PRETESTING			MID-TESTING			POSTTESTING		
GROUP	n	$\bar{X}$	S	n	$\bar{X}$	S	n	$\bar{X}$	S
INTERVENTION	50	93.80	17.75	50	93.70	18.38	46	94.04	19.04
COMPARISON	44	80.39	18.06	--	-----	----	41	90.37	18.66

BETWEEN GROUPS COMPARISONS

TESTING	$\bar{X}_{Int.}$	$\bar{X}_{Comp.}$	DIFF.	t'	df'	p
PRE	93.80	80.39	-13.41	-3.62	90	< 0.01
POST	94.04	90.37	- 3.67	-0.91	84	NS

WITHIN GROUP COMPARISONS

GROUP	COMPARISON	DIFF.'	r	t	df	p
	$\bar{X}_{Pre} - \bar{X}_{Mid}$	0.10	.771	0.06	49	NS
INTERVENTION	$\bar{X}_{Mid} - \bar{X}_{Post}$	-0.34	.783	-0.19	45	NS
	$\bar{X}_{Pre} - \bar{X}_{Post}$	-0.24	.804	-0.14	45	NS
COMPARISON	$\bar{X}_{Pre} - \bar{X}_{Post}$	-9.98	.482	-3.42	40	< 0.01

TABLE 6

COMPARISON OF MEAN DIFFERENCES

PCB - GRADE 5

SUMMARY

GROUP	PRETESTING n	$\bar{X}$	S	MID-TESTING n	$\bar{X}$	S	POSTTESTING n	$\bar{X}$	S
INTERVENTION	50	48.34	12.10	50	45.98	9.33	46	48.41	10.34
COMPARISON	44	41.48	10.93	--	-----	----	41	46.20	11.74

BETWEEN GROUPS COMPARISONS

TESTING	$\bar{X}_{Int.}$	$\bar{X}_{Comp.}$	DIFF.	t'	df'	p
PRE	48.34	41.48	-6.86	-2.89	92	<0.01
POST	48.41	46.20	-2.21	-0.93	80	NS

WITHIN GROUP COMPARISONS

GROUP	COMPARISON	DIFF.'	r	t	df	p
	$\bar{X}_{Pre} - \bar{X}_{Mid}$	2.36	.659	1.81	49	NS
INTERVENTION	$\bar{X}_{Mid} - \bar{X}_{Post}$	-2.43	.512	-1.69	45	NS
	$\bar{X}_{Pre} - \bar{X}_{Post}$	-0.07	.598	-0.05	45	NS
COMPARISON	$\bar{X}_{Pre} - \bar{X}_{Post}$	-4.72	.477	-2.60	40	<0.05

TABLE 7

COMPARISON OF MEAN DIFFERENCES

TENNENBAUM - GRADE 5

SUMMARY

GROUP	PRETESTING n	$\bar{X}$	S	MID-TESTING n	$\bar{X}$	S	POSTTESTING n	$\bar{X}$	S
INTERVENTION	50	69.50	10.14	50	71.60	10.62	46	74.13	11.87
COMPARISON	44	64.59	8.70	--	-----	-----	41	70.05	10.83

BETWEEN GROUPS COMPARISONS

TESTING	$\bar{X}_{Int.}$	$\bar{X}_{Comp.}$	DIFF.	t'	df'	p
PRE	69.50	64.59	-4.91	-2.53	92	<0.05
POST	74.13	70.05	-4.08	-1.68	85	NS

WITHIN GROUP COMPARISONS

GROUP	COMPARISON	DIFF.'	r	t	df	p
INTERVENTION	$\bar{X}_{Pre} - \bar{X}_{Mid}$	-2.10	.567	-1.54	49	NS
	$\bar{X}_{Mid} - \bar{X}_{Post}$	-2.53	.785	-2.30	45	<0.05
	$\bar{X}_{Pre} - \bar{X}_{Post}$	-4.63	.667	-3.44	45	<0.01
COMPARISON	$\bar{X}_{Pre} - \bar{X}_{Post}$	-5.46	.557	-3.71	40	<0.01

TABLE 8

COMPARISON OF MEAN DIFFERENCES

UNIVERSITY SCALE - GRADE 6

SUMMARY

GROUP	PRETESTING n	$\bar{X}$	S	MID-TESTING n	$\bar{X}$	S	POSTTESTING n	$\bar{X}$	S
INTERVENTION	52	85.52	18.51	52	87.75	18.32	46	89.37	18.04
COMPARISON	46	90.85	18.30	--	-----	-----	42	99.93	19.08

BETWEEN GROUPS COMPARISONS

TESTING	$\bar{X}_{Int.}$	$\bar{X}_{Comp.}$	DIFF.	t'	df'	p
PRE	85.52	90.85	+ 5.33	1.43	95	NS
POST	89.37	99.93	+10.56	2.66	84	<0.01

WITHIN GROUP COMPARISONS

GROUP	COMPARISON	DIFF.'	r	t	df	p
INTERVENTION	$\bar{X}_{Pre} - \bar{X}_{Mid}$	-2.23	.687	-1.10	51	NS
	$\bar{X}_{Mid} - \bar{X}_{Post}$	-1.62	.837	-1.06	45	NS
	$\bar{X}_{Pre} - \bar{X}_{Post}$	-3.85	.670	-1.76	45	NS
COMPARISON	$\bar{X}_{Pre} - \bar{X}_{Post}$	-9.08	.682	-4.01	41	<0.01

TABLE 9

COMPARISON OF MEAN DIFFERENCES

PCB - GRADE 6

SUMMARY

GROUP	PRETESTING n	$\bar{X}$	S	MID-TESTING n	$\bar{X}$	S	POSTTESTING n	$\bar{X}$	S
INTERVENTION	52	43.25	12.19	52	42.40	12.68	46	46.35	13.49
COMPARISON	46	58.37	14.35	--	-----	-----	42	60.69	15.55

BETWEEN GROUPS COMPARISONS

TESTING	$\bar{X}_{Int.}$	$\bar{X}_{Comp.}$	DIFF.	t'	df'	p
PRE	43.25	58.37	15.12	5.58	89	<0.01
POST	46.35	60.69	14.34	4.60	82	<0.01

WITHIN GROUP COMPARISONS

GROUP	COMPARISON	DIFF.'	r	t	df	p
	$\bar{X}_{Pre} - \bar{X}_{Mid}$	0.85	.790	0.76	51	NS
INTERVENTION	$\bar{X}_{Mid} - \bar{X}_{Post}$	-3.95	.831	-3.50	45	<0.01
	$\bar{X}_{Pre} - \bar{X}_{Post}$	-3.10	.686	-2.05	45	<0.05
COMPARISON	$\bar{X}_{Pre} - \bar{X}_{Post}$	-2.32	.569	-1.08	41	NS

TABLE 10

COMPARISON OF MEAN DIFFERENCES

TENNENBAUM - GRADE 6

SUMMARY

GROUP	PRETESTING n	$\bar{X}$	S	MID-TESTING n	$\bar{X}$	S	POSTTESTING n	$\bar{X}$	S
INTERVENTION	52	67.96	12.00	52	67.58	11.33	46	69.91	10.75
COMPARISON	46	71.39	13.12	--	-----	-----	42	73.69	13.38

BETWEEN GROUPS COMPARISONS

TESTING	$\bar{X}_{Int.}$	$\bar{X}_{Comp.}$	DIFF.	t'	df'	p
PRE	67.96	71.39	3.43	1.34	92	NS
POST	69.91	73.69	3.78	1.45	79	NS

WITHIN GROUP COMPARISONS

GROUP	COMPARISON	DIFF.'	r	t	df	p
INTERVENTION	$\bar{X}_{Pre} - \bar{X}_{Mid}$	0.38	.696	0.30	51	NS
	$\bar{X}_{Mid} - \bar{X}_{Post}$	-2.33	.855	-2.65	45	<0.05
	$\bar{X}_{Pre} - \bar{X}_{Post}$	-1.95	.658	-1.40	45	NS
COMPARISON	$\bar{X}_{Pre} - \bar{X}_{Post}$	-2.30	.684	-1.41	41	NS

TABLE 11

MEAN NUMBER AND PERCENT OF CLASSIFIED VERBAL BEHAVIORS

OF TEACHERS IN INTERVENTION CLASSROOMS

Grade	3				5				6			
Teacher Identification	A		B		C		D		E		F	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
1	9	30	15	28	6	9	19	35	10	18	14	26
2	0	0	0	0	0	0	0	0	3	6	0	0
3	12	40	33	62	25	38	30	56	30	56	34	63
4	6	20	3	6	23	35	5	9	6	11	6	11
5	3	10	2	4	7	10	0	0	5	9	0	0
6	0	0	0	0	5	8	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
Total	30	100	53	100	66	100	54	100	54	100	54	100

TABLE 12

CORRELATIONS BETWEEN ATTITUDE AND

ACHIEVEMENT MEASURES

GRADE 3

				Pre U Scale	Pre PCB	Pre Tenn	Post U Scale	Post PCB	Post Tenn
Comparison Classrooms N=47	Pre	Total	Reading	-.22	-.09	-.18	-.43[3]	-.23	-.48[3]
	Pre	Total	Language	-.11	.03	-.11	-.40[3]	-.28	-.41[3]
	Pre	Total	Math	-.51[3]	-.28	-.31[2]	-.46[3]	-.30[1]	-.47[3]
	Post	Total	Reading	-.41[3]	-.26	-.36[2]	-.37[3]	-.28[1]	-.46[3]
	Post	Total	Language	-.47[3]	-.18	-.43[3]	-.39[3]	-.27	-.34[2]
	Post	Total	Math	-.50[3]	-.18	-.31[1]	-.33[2]	-.20	-.40[3]
Intervention Classrooms N=41	Pre	Total	Reading	.04	-.01	.11	.19	.09	.19
	Pre	Total	Language	.02	-.24	.02	.17	.12	.13
	Pre	Total	Math	.21	.10	.16	.17	.11	.15
	Post	Total	Reading	-.02	-.08	-.05	.02	-.06	.03
	Post	Total	Language	.09	.09	.03	.18	.04	.17
	Post	Total	Math	.11	-.01	-.04	.03	-.07	.06

1: $P < .05$
2: $P < .02$
3: $P < .01$

TABLE 13

CORRELATIONS BETWEEN ATTITUDE

AND ACHIEVEMENT MEASURES

GRADE 5

				Pre U Scale	Pre PCB	Pre Tenn	Post U Scale	Post PCB	Post Tenn
Comparison Classrooms N=40	Pre	Total	Reading	-.32[1]	-.34[1]	-.33[1]	-.18	-.05	-.09
	Pre	Total	Language	-.43[3]	-.40[3]	-.44[3]	-.40[3]	-.19	-.40[3]
	Pre	Total	Math	-.30	-.36[2]	-.28	-.26	-.08	-.26
	Post	Total	Reading	-.36[2]	-.31[1]	-.37[2]	-.19	-.03	-.11
	Post	Total	Language	-.42[3]	-.35[1]	-.42[3]	-.20	-.03	-.24
	Post	Total	Math	-.42[3]	-.32[1]	-.46[3]	-.15	.06	-.27
Intervention Classrooms N=45	Pre	Total	Reading	-.07	.08	-.07	.07	-.09	-.09
	Pre	Total	Language	-.22	.12	-.20	.04	-.07	.00
	Pre	Total	Math	-.21	.20	-.25	-.01	-.21	-.22
	Post	Total	Reading	-.17	.12	-.11	-.15	.03	-.16
	Post	Total	Language	-.26	-.09	-.17	-.26	-.16	-.32[1]
	Post	Total	Math	-.21	-.07	-.24	-.19	-.12	-.23

1: $P < .05$
2: $P < .02$
3: $P < .01$

TABLE 14

CORRELATIONS BETWEEN ATTITUDE AND

ACHIEVEMENT MEASURES

GRADE 6

				Pre U Scale	Pre PCB	Pre Tenn	Post U Scale	Post PCB	Post Tenn
Comparison Classrooms N=42	Pre	Total	Reading	-.13	.06	-.01	-.18	.05	.02
	Pre	Total	Language	-.26	-.04	-.12	-.22	.02	-.12
	Pre	Total	Math	-.23	.03	-.01	-.24	.14	-.04
	Post	Total	Reading	-.15	.06	-.01	-.12	-.02	.04
	Post	Total	Language	-.21	.05	-.13	-.23	-.04	-.11
	Post	Total	Math	-.23	-.01	-.19	-.26	-.04	-.19
Intervention Classrooms N=44	Pre	Total	Reading	.10	-.12	-.16	-.05	.05	-.11
	Pre	Total	Language	-.01	.04	-.06	-.05	.16	-.16
	Pre	Total	Math	-.01	-.07	-.05	.02	-.02	-.05
	Post	Total	Reading	-.13	-.11	-.09	-.03	-.01	-.10
	Post	Total	Language	-.18	-.07	-.17	-.18	.01	-.31
	Post	Total	Math	-.07	-.17	-.08	-.29	-.22	-.36

1: $P < .05$

2: $P < .02$

3: $P < .01$

TABLE 15

COMPARISON OF MEANS AND STANDARD DEVIATIONS

ON CTBS ACHIEVEMENT MEASURES

GRADE 3

	Pre Tests						Post Tests					
	Total Reading		Total Language		Total Math		Total Reading		Total Language		Total Math	
	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S
Intervention Classrooms N=41	50.5	15.6	57.1	13.6	58.4	15.6	57.8	15.1	59.6	12.2	83.2	16.8
Comparison Classrooms N=47	45.0	18.6	49.1	19.5	58.3	19.2	52.9	15.2	56.2	13.1	70.4	19.9

BETWEEN GROUP MEAN COMPARISONS

	Total Reading		Total Language[x]		Total Math[xx]	
	Pre	Post	Pre	Post	Pre	Post
Intervention Classrooms	50.3	57.8	57.1	59.6	58.4	83.2
Comparison Classrooms	45.0	52.9	49.1	56.2	58.3	70.4
Difference (Intervention) Comparison)	5.3	4.9	8.0	3.4	.1	12.8

F not significant for Intervention vs. Comparison
F = 76.78, significant at .001 for pre vs. post
F not significant for interaction

F = 76.78 significant at .001 for pre and post tests
F not significant Intervention vs. Comparison
F = 8.0 significant at .006 for interaction

F = 228.7 significant at .001 for pre vs. post
F not significant for Intervention vs. Comparison
F = 28.05, significant at .001 for interaction

WITHIN GROUP MEAN DIFFERENCES

(Post Test Mean minus Pre Test Mean)

	Total Reading	Language	Total Math
Intervention Classrooms	7.5	2.5	24.8
Comparison Classrooms	7.9	7.1	12.1

TABLE 16

COMPARISON OF MEANS AND STANDARD DEVIATIONS
ON METROPOLITAN ACHIEVEMENT TESTS
GRADE 5

	Pre Tests						Post Tests					
	Reading		Language		Total Math		Reading		Language		Total Math	
	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S
Intervention Classrooms N=45	25.7	8.9	50	13.8	58.6	14.4	28.8	8.7	59.2	16.0	73.7	14.8
Comparison Classrooms N=40	19.9	7.3	41	13.5	49.9	18.9	22.1	9.4	43.1	17.1	57.5	16.9

BETWEEN GROUP MEAN COMPARISONS

	Reading[xx]		Language[xxx]		Total Math[xxx]	
	Pre	Post	Pre	Post	Pre	Post
Intervention Classrooms	25.7	28.5	50.4	59.2	58.6	73.7
Comparison Classrooms	19.9	22.1	41.1	43.1	49.9	57.5
Difference (Intervention?Comparison)	5.8	6.4	9.3	16.1	8.7	16.2

F = 11.5 significant at .001 for Intervention vs. Comparison
F = 15.9 significant at .001 for Pre vs. Post
F = not significant for Interaction

F = 15.8 p<.001 for Intervention vs. Comparison
F = 31.5 p<.001 for Pre vs. Post
F = 11.8 p<.001 for Interaction

F = 14.2 significant at .001 for Intervention vs. Comparison
F = 161.4 significant at .001 for Pre vs. Post
F = 16.4 significant at .001 for Interaction

WITHIN GROUP MEAN DIFFERENCES

(Post Test Mean minus Pre Test Mean)

	Reading	Language	Total Math
Intervention Classrooms	2.2	2.0	7.6
Comparison Classrooms	2.8	8.8	15.1

TABLE 17

COMPARISON OF MEANS AND STANDARD DEVIATIONS

ON METROPOLITAN ACHIEVEMENT TESTS

GRADE 6

	Pre Tests						Post Tests					
	Reading		Language		Total Math		Reading		Language		Total Math	
	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S
Intervention Classrooms N=44	27.1	8.2	54.4	17.3	67.8	16.5	29.8	8.3	64.2	18.1	81.6	16.0
Comparison Classrooms N=42	20.6	8.1	40.9	15.2	54.5	18.1	20.8	10.1	43.6	17.0	62.9	19.5

BETWEEN GROUP MEAN COMPARISONS

	Reading		Language[xxx]		Total Math	
	Pre	Post	Pre	Post	Pre	Post
Intervention Classrooms	27.1	29.8	54.4	64.2	67.8	81.6
Comparison Classrooms	20.6	20.8	40.9	43.6	54.5	62.9
Difference (Intervention Comparison)	6.5	9.0	13.5	20.6	13.3	18.7

F = 18.56 significant at .001 for Intervention vs. Comparison
F = 5.67 significant at .02 for Pre vs. Post
F = 4.5 signigicant at .04 for interaction

F = 23.0 significant .001 for Intervention vs. Comparison
F = 36.8 significant at .001 for Pre vs. Post
F = 11.7 significant at .001 for interaction

F = 18.9 significant at .001 for Intervention vs. Comparison
F = 95.4 significant at .001 for Pre vs. Post
F = 5.77 significant at .02 for interaction

WITHIN GROUP MEAN DIFFERENCES

(Post Test Mean minus Pre Test Mean)

	Total Reading	Language	Total Math
Intervention Classrooms	2.7	9.8	13.8
Comparison Classrooms	.2	2.7	8.4

FIGURE 1

UNIVERSITY SCALE - GRADE 3

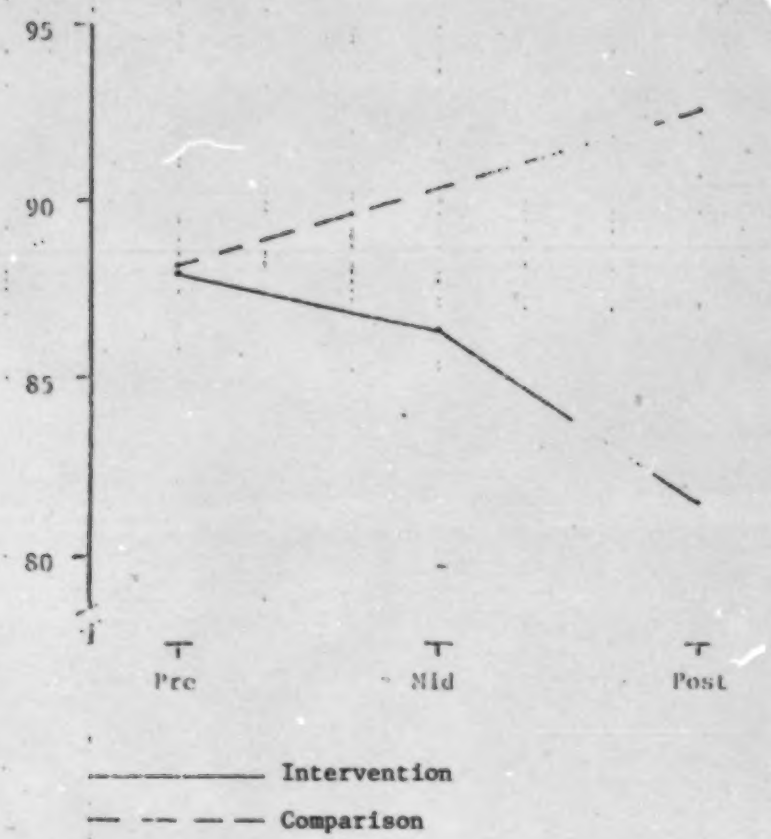

FIGURE 2

PCB SCALE - GRADE 3

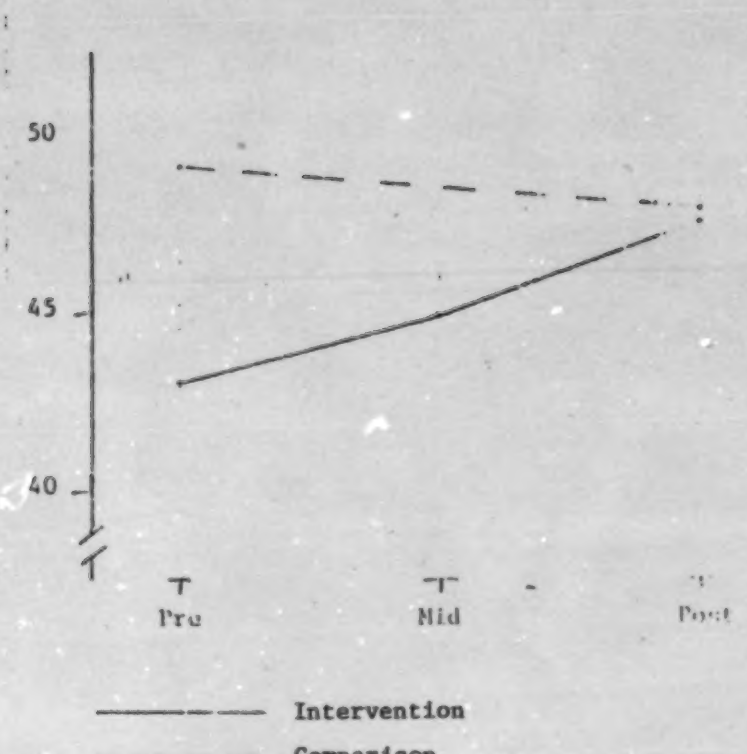

FIGURE 3

TENNENBAUM SCALE - GRADE 3

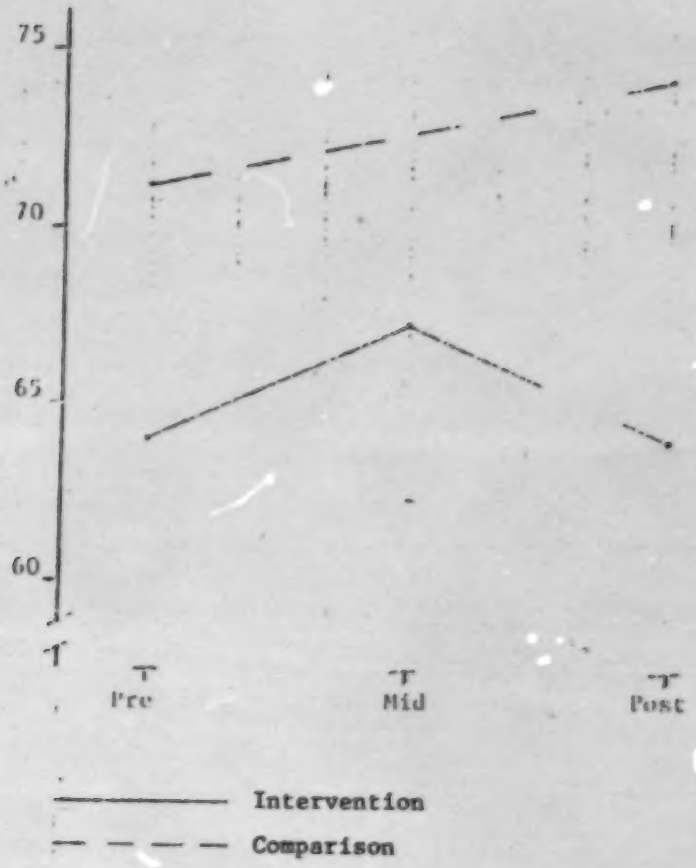

FIGURE 4

UNIVERSITY SCALE - GRADE 5

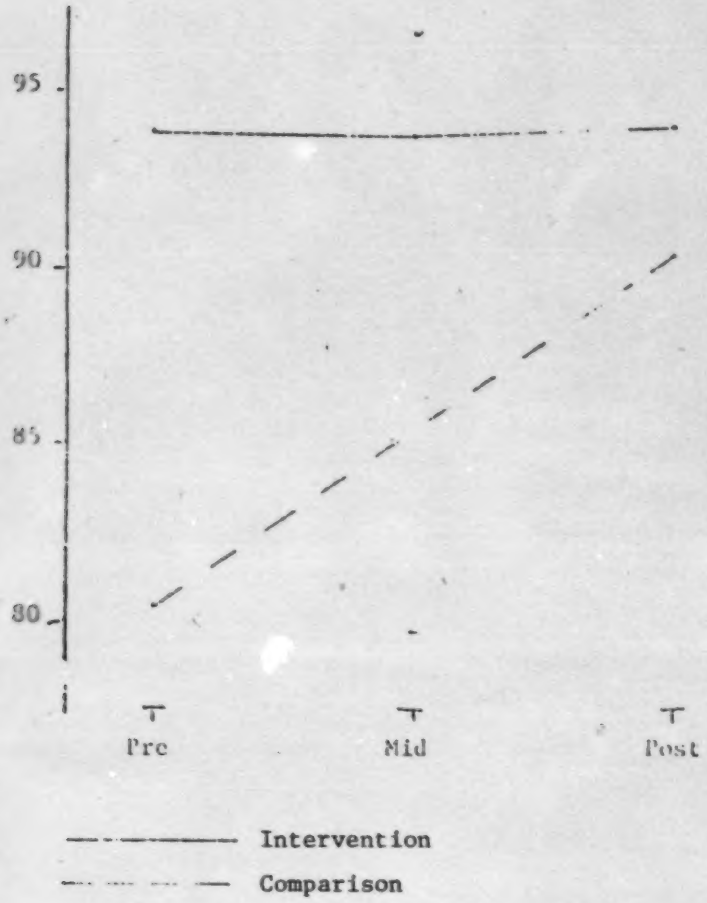

FIGURE 5

PCB SCALE - GRADE 5

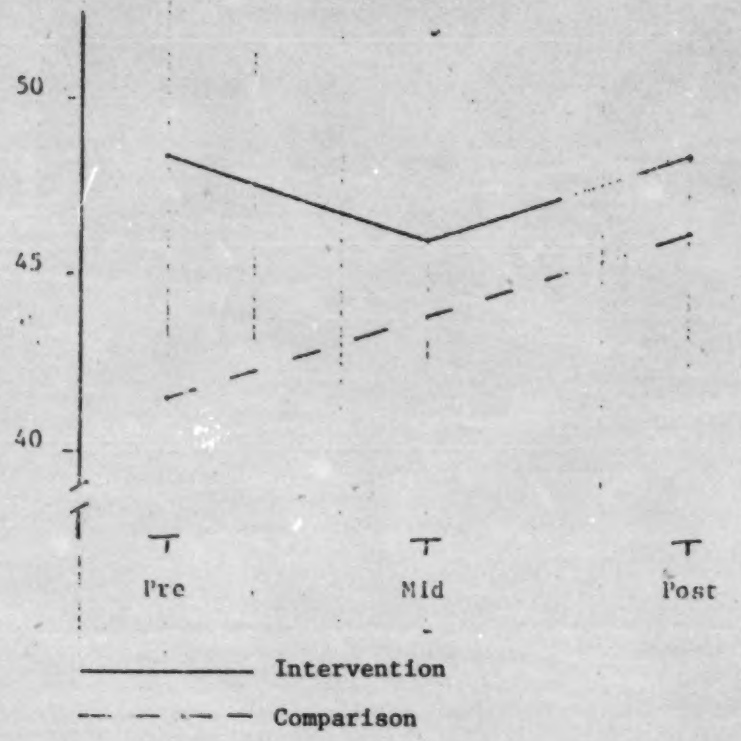

FIGURE 6

TENNENBAUM SCALE - GRADE 3

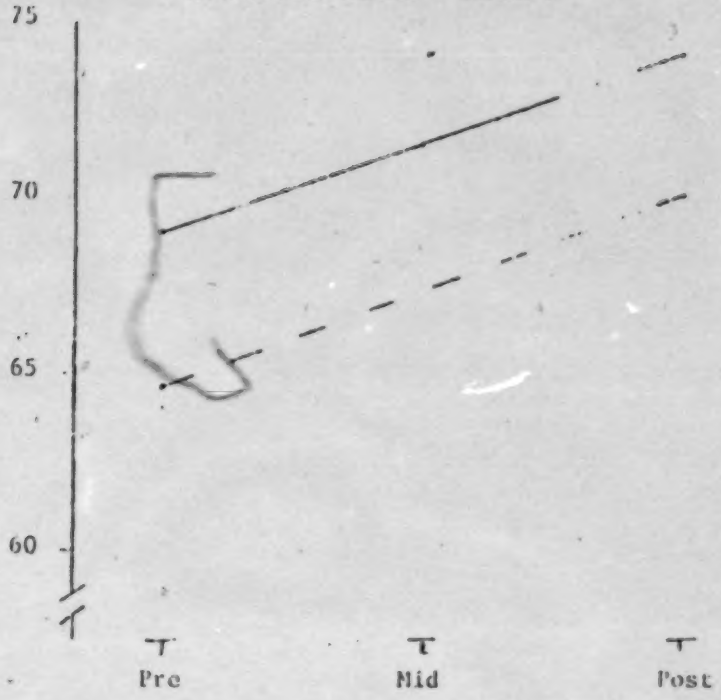

FIGURE 7

UNIVERSITY SCALE - GRADE 6

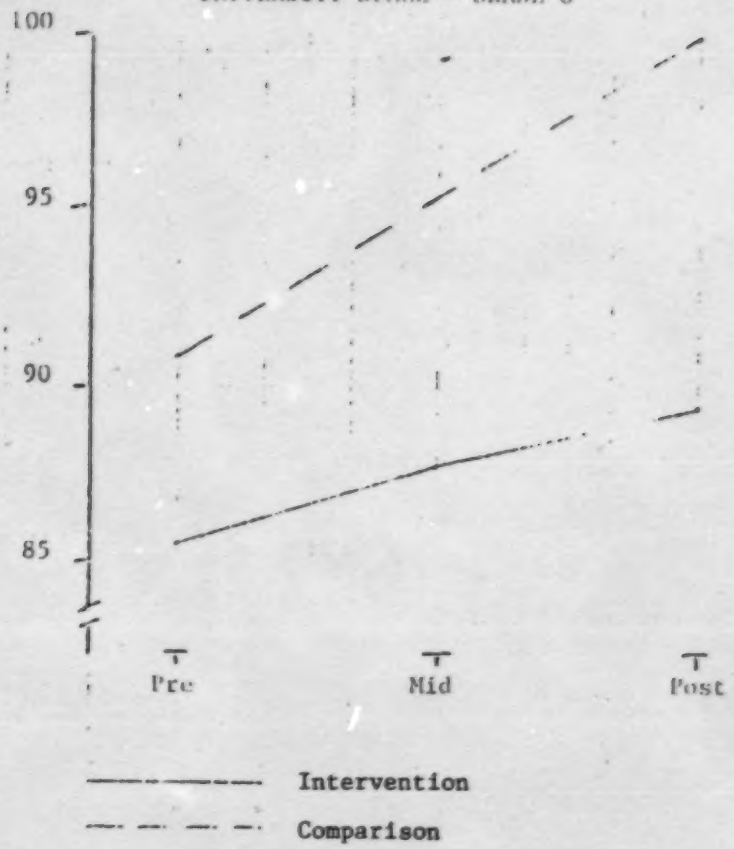

FIGURE 8

PCB SCALE -- GRADE 6

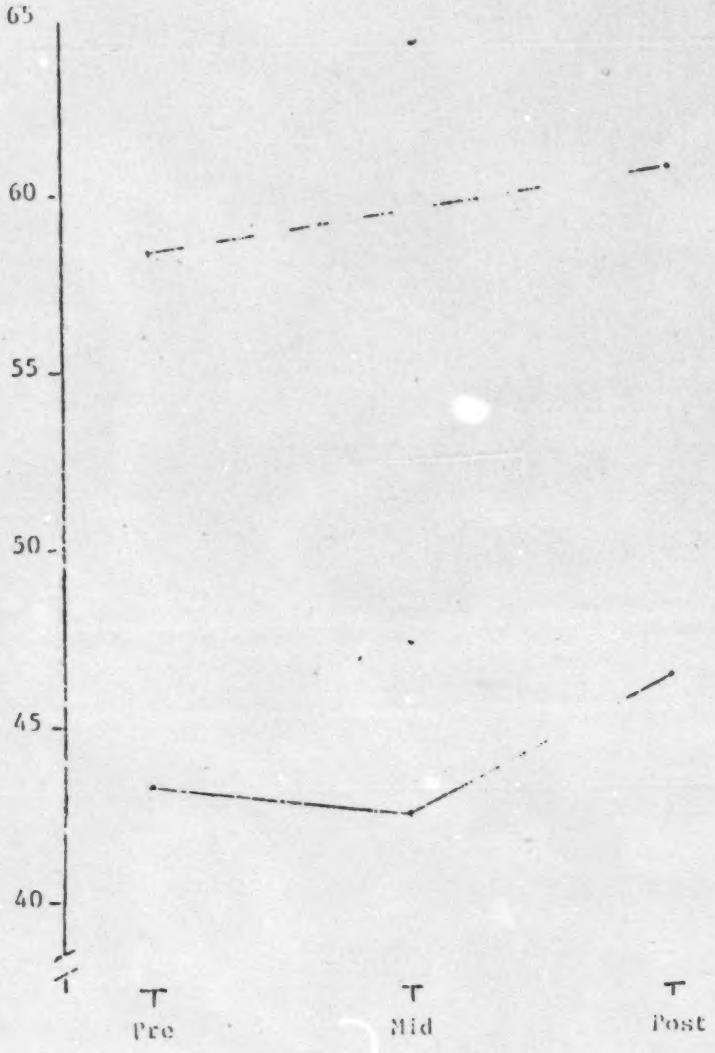

FIGURE 9

TENNENBAUM SCALE - GRADE 6

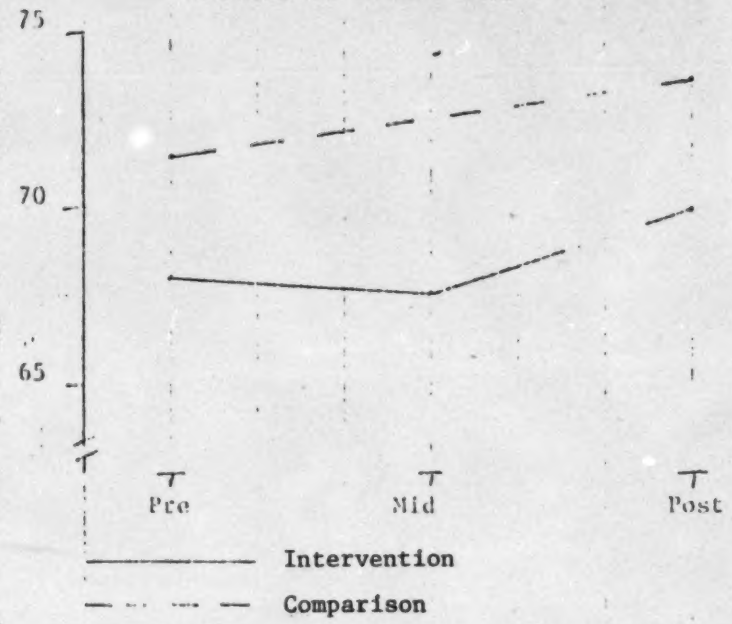

Figure 10

University Scale

Gr. 3

Teachers in Intervention Classes

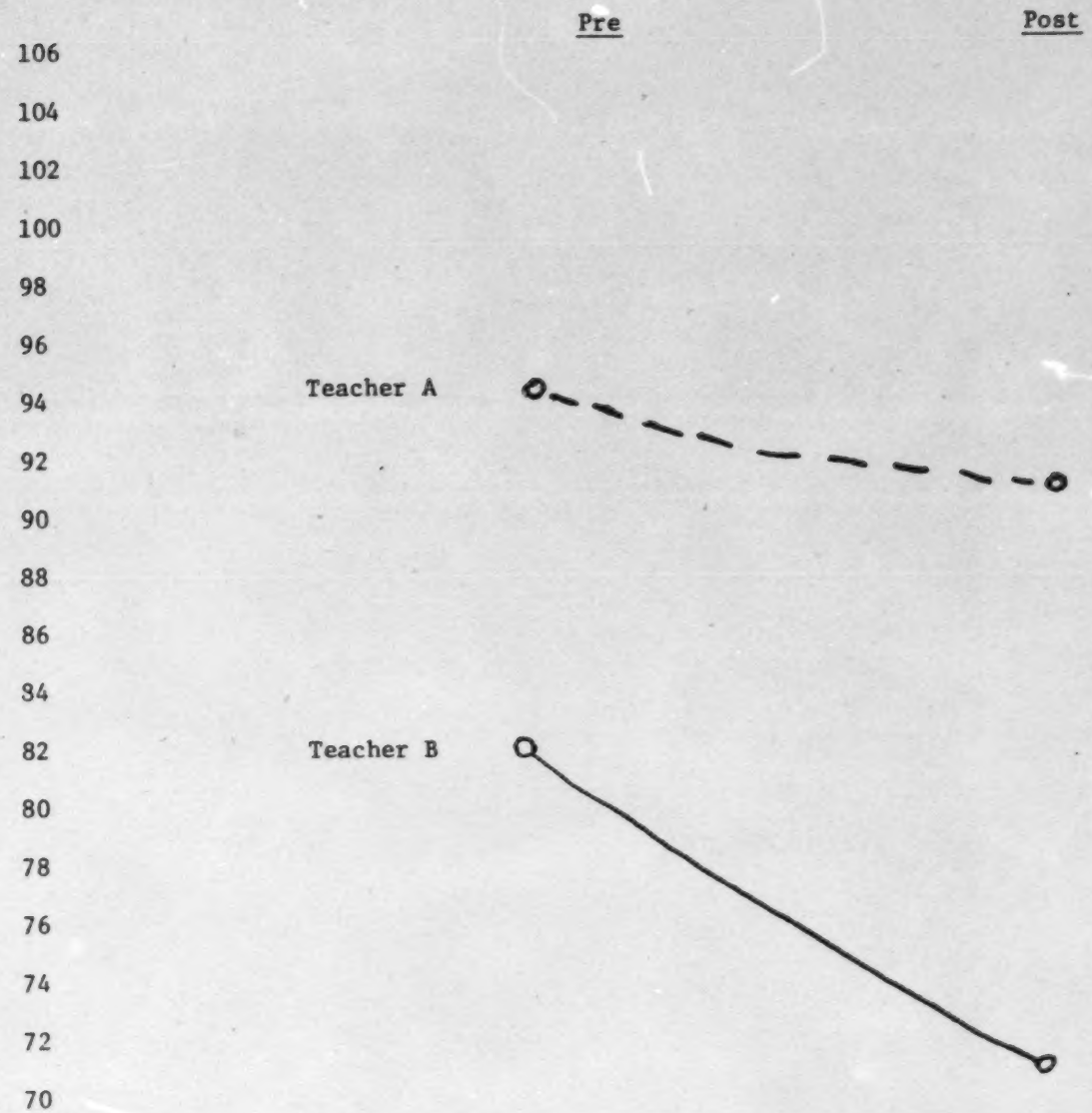

Figure 11
University Scale
Grade 5
Teachers in Intervention Classes

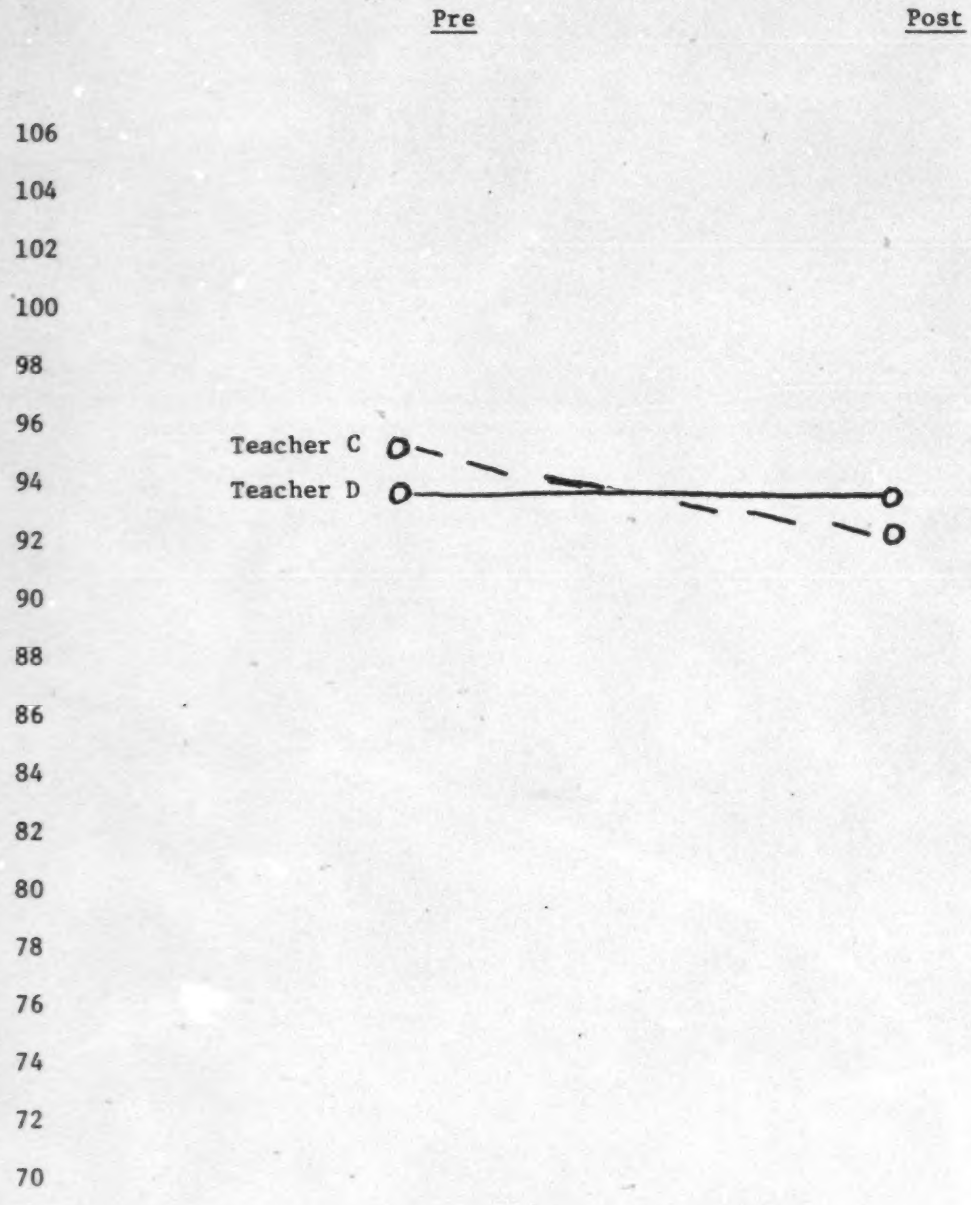

Figure 12

University Scale

Grade 6

Teachers in Intervention Classes

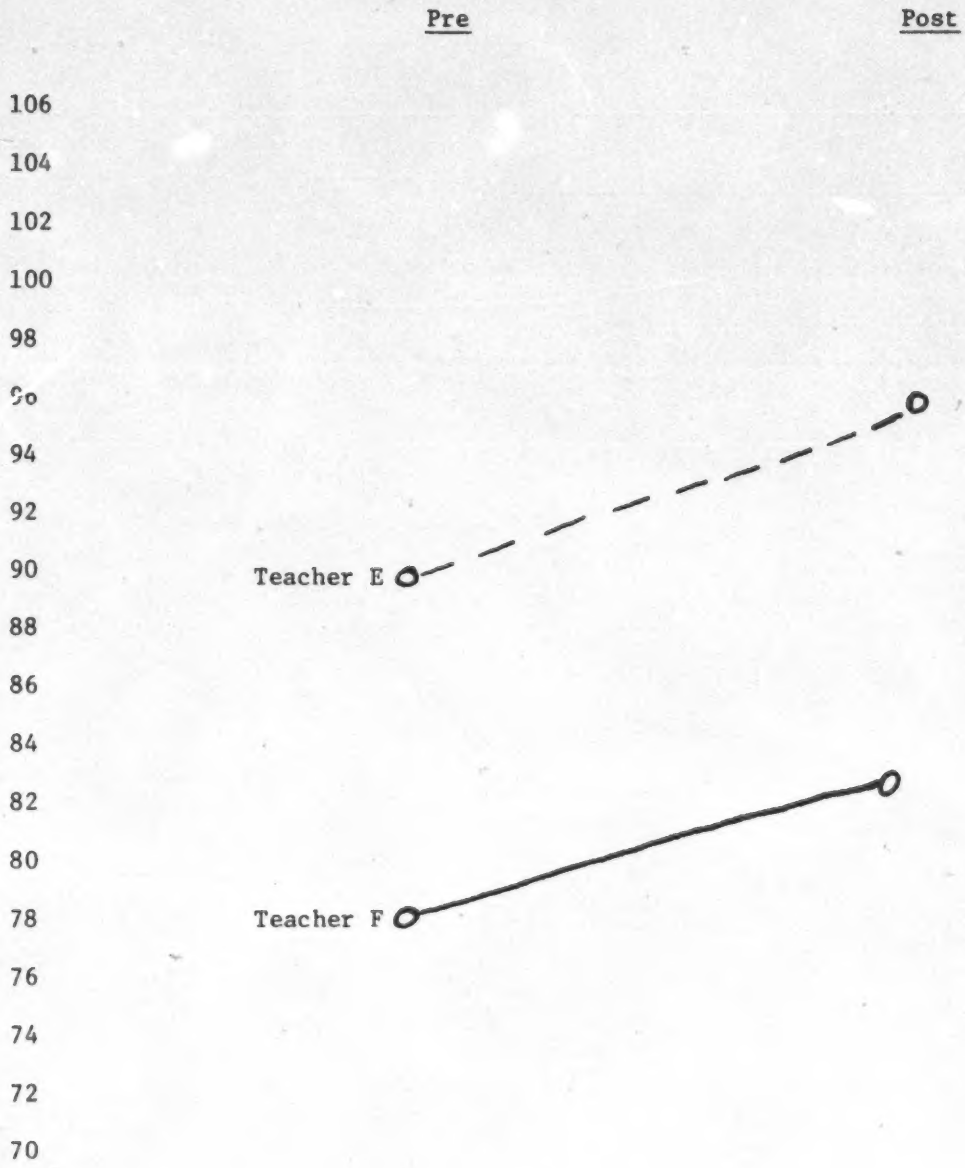

Figure 13

PCB

Grade 3

Teachers in Intervention Classes

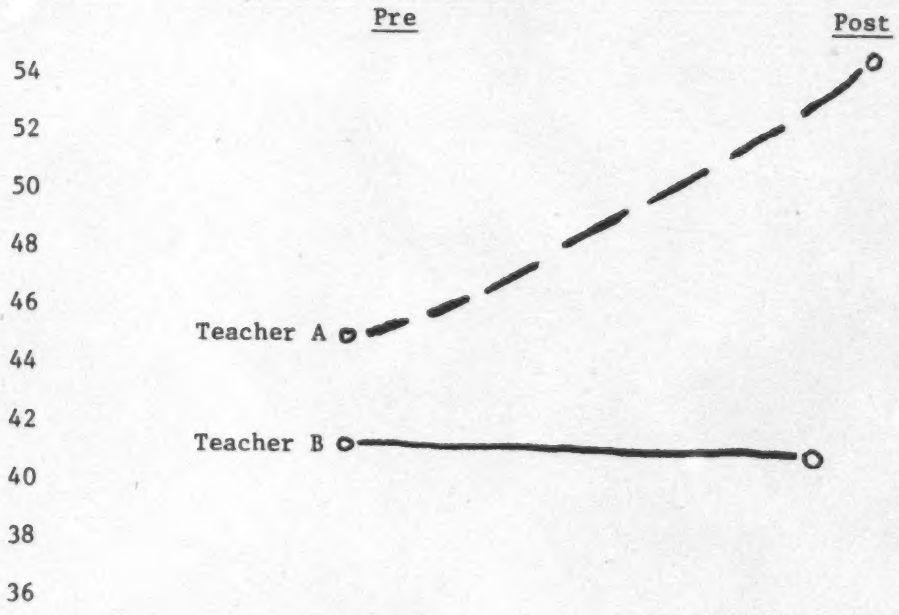

Figure 14

PCB

Grade 5

Teachers in Intervention Classes

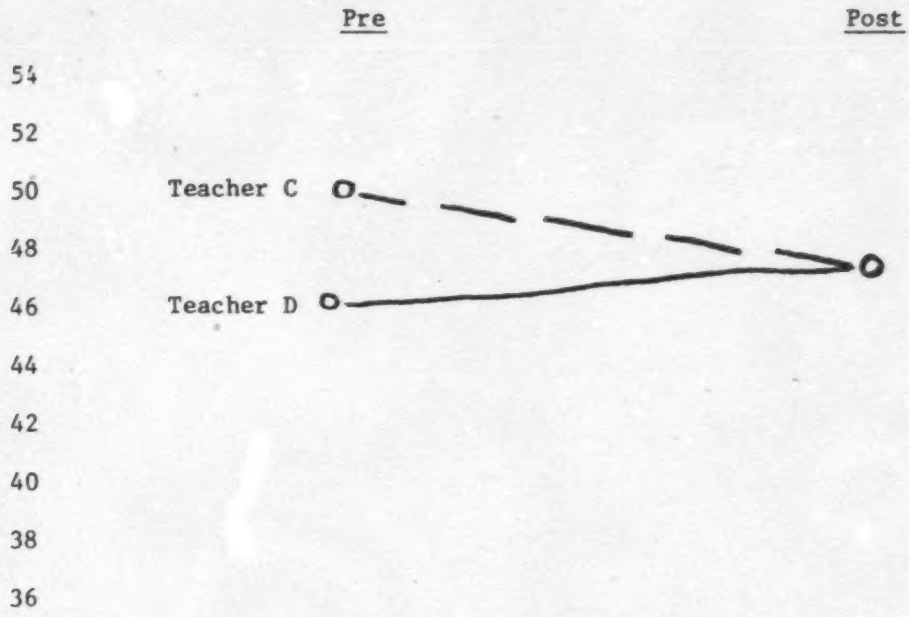

Figure 15

PCB

Grade 6

Teachers in Intervention Classes

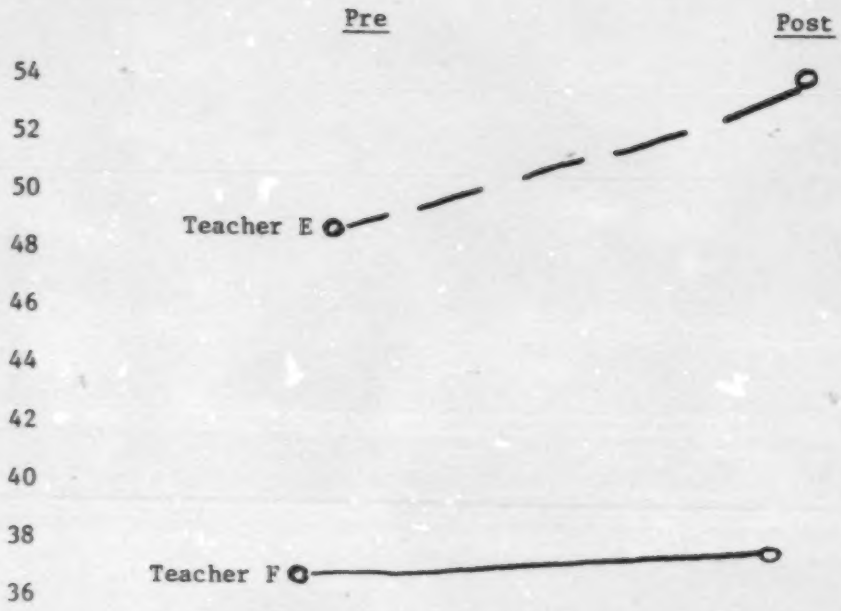

Figure 16

Tennenbaum Attitude Scale

Grade 3

Teachers in Intervention Classes

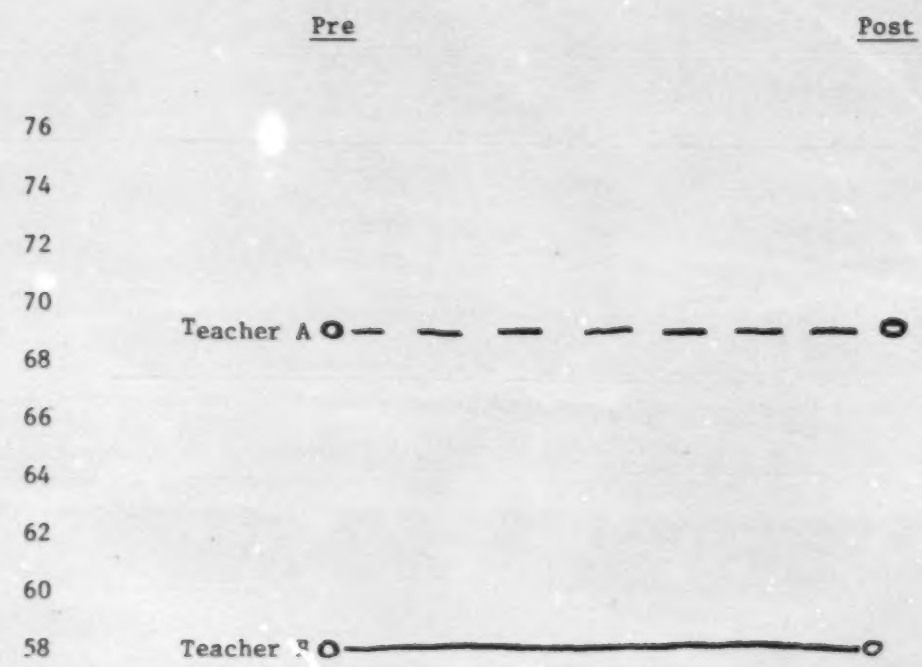

Figure 17

Tennenbaum Attitude Scale

Grade 5

Teachers in Intervention Classes

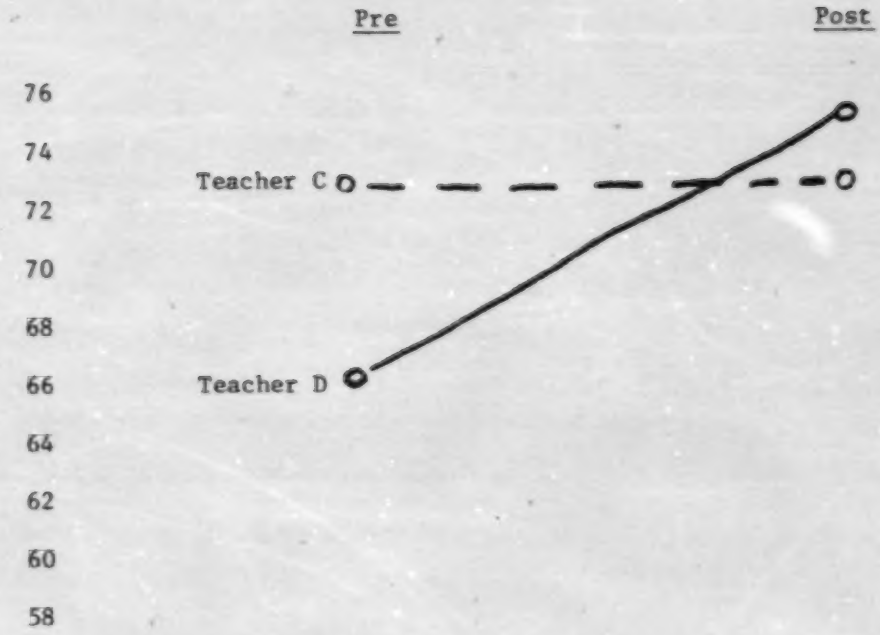

Figure 18

Tennebaum Attitude Scale

Grade 6

Teachers in Intervention Classes